

REMARKS

Claims 1-35 are under final rejection in the present application. It is respectfully requested the Examiner reconsider the final rejection in light of the following remarks.

The Examiner rejected Claims 1-14, 16, and 18-29 under 35 U.S.C. §103(a) as being unpatentable over Sasaki in view of Aga et al., hereinafter Aga. It is respectfully asserted that the present invention is both novel and non-obvious in view of all known prior art and particularly in view of the cited references.

The present invention teaches and claims a method of controlling a vehicle with a 4X4 driving system and requires transferring driving torque both through an electronically-controlled center differential or an electronically controlled transfer case and to the front wheels of the vehicle in response to a potential rollover condition signal so as to prevent rollover of the vehicle. The present invention is directed to integrating roll stability control and controlled differentials so as to enhance the performance compared to when the systems are separately operated.

Brake based roll stability control systems and electronically controlled differentials are both present on vehicles. However, the two systems operated independently of each other. Both references cited by the Examiner do not consider the synergy of the systems as taught in claimed in the present invention. Therefore, it is respectfully asserted that there is not motivation to combine the references and that their combination would not result in the Applicants' invention.

Roll stability control is directed to reducing excessive lateral forces at the outside wheels of the vehicle. Typically, braking forces are applied to the outside front wheel to reduce the lateral force at the front outside wheel. The corrective forces in the longitudinal direction through driving torque for the purpose of reducing lateral tire forces are not directly used for achieving roll stability control. The present invention is directed to providing a system that uses the controlled driving torques through controlling the axle and center differentials in a 4X4 system to help reduce the potential for a rollover, or to achieve roll stability control performance during a potential rollover event.

To accomplish this, the present invention teaches and claims transferring drive torques in both front and rear axles using the 4X4 system in response to a rollover signal. Therefore, roll stability control performances can be achieved not only by the front outside wheel but also by the

rear outside wheel. The weight transfer due to acceleration through driving torque management in a 4X4 system may be more favorable for roll stability control purposes than the weight transfer due to deceleration during braking from a brake control system. The acceleration causes the vehicle weight transfer from the front to the rear, while the deceleration causes the vehicle weight transfer from the rear to the front. Both front and rear tires are effective in terms of removing lateral forces through increasing longitudinal forces. In “determining a potential rollover condition...” and “transferring driving torque...to the front wheels so as to prevent rollover of the vehicle” integration between the driving torque control and the brake torque control is claimed in the present invention. The present invention is increasing longitudinal slip through differential torque application to prevent rollover.

The Examiner asserted that Sasaki fails to teach or disclose determining a potential rollover condition. Applicants’ agree and respectfully assert, therefore, that Sasaki cannot possibly teach or disclose transferring drive torque to the front wheels of the vehicle so as to prevent a rollover of the vehicle as claimed in the present invention. Further, the Sasaki reference teaches a method that attempts to limit differential action to keep longitudinal wheel slip below a threshold. This is a fundamentally different method of control than the present invention which actually results in an increase in longitudinal slip to prevent rollover.

It is respectfully asserted that merely combining Sasaki with a reference that teaches determining a rollover condition does not teach or disclose transferring driving torque to the front wheel of the vehicle so as to prevent rollover of the vehicle as claimed in the present invention. The Aga reference teaches and discloses determining a rollover condition based on a lateral acceleration and teaches activating an occupant protecting apparatus on the rollover side upon determination of the rollover condition. The Aga reference does not teach or disclose preventing a rollover of the vehicle. The reference does not teach or disclose transferring drive torque in response to the rollover signal, nor does it teach or disclose applying braking in response to the rollover signal.

The present invention teaches and claims integration between the driving torque control and the brake torque control to prevent rollover of a vehicle, which is neither taught nor disclosed in either reference cited by the Examiner. There is no motivation or suggestion to combine the references as suggested by the Examiner to integrate a roll stability control and a driving torque control system as claimed in the present invention. Therefore, it is respectfully

asserted that one skilled in the art would not look to combine the references as cited by the Examiner and that even if the references were combined, their combination would not result in the Applicants' invention.

It is respectfully requested the Examiner withdraw the rejection of claims 1-35 under 35 U.S.C. §103.

CONCLUSION

In light of the above amendments and remarks, applicant submits that the claims are in condition for allowance, and requests that the outstanding rejections be withdrawn and a formal Notice of Allowance be issued therefore. If a telephone conference would expedite allowance of the claims, the examiner may wish to telephone Applicants' Attorney at (480)200-2054.

Respectfully submitted,

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Date: 12/12/08